EXHIBIT 1-ATTACHMENT J

SIERRA CLUB COMMENTS ON CONSENT DECREES, ATT. K:

SUPPLEMENTAL DECLARATION OF MICHAEL KAVANAUGH

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

United States of America, et al.	)	
	)	
Plaintiffs,	)	
	)	
v.	)	**Case No. 1-02-107**
	)	
	)	
The Board of County Commissioners	)	
of Hamilton County, Ohio and The City of	)	Judge S. Arthur Spiegel
Cincinnati	)	
	)	Magistrate Judge Timothy S. Hogan
	)	
	)	
Defendants.	)	
	)	
	)	

SUPPLEMENTAL DECLARATION OF
MICHAEL KAVANAUGH, PH.D.

I Michael Kavanaugh, Ph.D., being of full age, hereby declare and state as follows:

A. Introduction and Summary

1. The Miami Valley Group of the Sierra Club asked me to review and comment on the statements made by the Metropolitan Sewer District of Greater Cincinnati (MSD) and its consultants [1] about MSD's ability to pay for the pollution controls needed to remediate violations of the federal Clean Water Act. Ability-to-pay, sometimes called financial capability, means a community can pay for pollution control spending without financial distress. For a community, financial distress is signaled if a measure of user fees [2] expressed

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[1] Mr. Clyde Wilber in cooperation with Professor George Vredeveld.

[2] According to US EPA, the measure is the average household user fee less depreciation. This is total system cost less depreciation multiplied by the residential sectors' share of flow divided by the number of

as a share of median household income exceeds a certain threshold. The Sierra Club also asked me to estimate the rates needed to pay for pollution control spending.[3] MSD provided the costs of collection system improvements and treatment plant upgrades needed to comply with the Clean Water Act (CWA).

2. MSD has been violating the Clean Water Act for over a generation. In 1985, in an effort to remedy on going violations of the Mill Creek Treatment Plant NPDES permit, the United States filed a civil action against MSD. This civil action led to a consent order that required corrective measures to bring the plant into compliance. In 1991, the MSD commissioned the Stormwater Wastewater Integrated Management Plan (SWIM). The SWIM report acknowledged structural deterioration to the collection system was ongoing since 1968 causing basement flooding and sewer overflows from overloaded trunk sewers.[4] The system barely achieved a Class D rating. In 1992, the Director of the OEPA issued Findings of Fact and Orders against MSD to require elimination of Sanitary Sewer Overflows. MSD has not met the terms of the DFFO, as many sanitary sewer overflows continue to the present time. Negotiations and violations of the CWA continue to this day. The United States, the State of Ohio and Sierra Club are seeking a new order that deals comprehensively with collection system improvements and overflow controls as well as NPDES exceedences at treatment plants.

3. Serious observers of Hamilton County's wastewater control problems agree that compliance with the CWA will consume significant resources, most probably in the range of $1 to $3 billion.[5] This spending will occur over time. Opinions vary over how much time, but most see completion and compliance in another 10 to 20 years.

4. Paying for compliance requires increases in wastewater user fees. The increases will take place over time, mirroring largely the construction of the plant upgrades, system improvements, and sewer overflow controls. It is important to look with candor and honesty both at the fees MSD users will pay and at the ratepayers' financial capability. Failure to do so can lead to insufficient resource allocations.

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households. USEPA counsels that depreciation should be excluded from the burden assessment because depreciation is not a cash cost but rather it is a form of savings. It is paid by the community to be held in trust by the utility to replace capital as needed.

[3] To fulfill this assignment I reviewed the documents listed under Sources Considered. I also had conversations about this material with plaintiffs' attorneys and with Dr. Bruce Bell, plaintiffs' engineering expert. Finally, I attended the telephonic deposition of Clyde Wilber via speakerphone at the office of plaintiffs' attorney (Mr. Slap).

[4] SWIM, Summary Report, p.4. I interpret the SWIM statement to mean that for at least 21 years MSD did not spend sufficient funds to repair and maintain the collection system. Further, since from 1991 to the present the collection system continues to cause basement flooding and overflows from trunk sewers, then the insufficient funding observed by the authors of the SWIM report in 1991 continues to this day. I conclude that for 35 years the collection system in the care of MSD has been only partially funded.

[5] The 1991 SWIM report estimated it would cost about $1.3 billion in 1991 dollars (excluding expansion of service areas) to improve MSD from a Class D to a Class B system. (Class B represents a system expected to be in compliance with early 21st century regulations and standards.) SWIM estimates it will cost $2 billion 1991 dollars to improve MSD from a Class D to a Class A system.

5. Estimating a community's ability to pay for pollution control is complex. First, there are many variables to consider. These include pollution control costs, the current and future level of existing costs, the level and rate of growth of the number of households, the household share of flow and their median income. Second, pollution controls may not occur in isolation. Other water quality control programs, stormwater control for example, may be implemented concurrently with pollution controls. Some may try to frame the debate as a choice among programs. Others may point to cost ambiguities and play upon citizens' fears. Accordingly, good public policy requires reducing the ambiguity about the financial effects of compliance with the CWA. Third, knowing only the level of current and future costs and rates is inadequate to make judgments about a community's ability to pay to protect human health and the environment. Rates must be expressed relative to income and compared to USEPA's indicator of affordability.[6]

6. First, my analysis finds that the MSD ratepayers have the ability to pay for system improvements (SSO, CSO, WIB and treatment plant upgrades) designed from an engineering standpoint to deal with the 10-year, 24-hour storm. This is what MSD has called the Minimum or Standard Program. Rates adjusted for depreciation will increase an average of 5.4 % per year for the next 20 years. These rates, when stated as a share of median household income never exceed .8% of median household income. This is well below USEPA's threshold of financial distress. Over this period, MSD ratepayers may have to pay for other water quality programs unrelated to wastewater collection and treatment system improvements. I considered two other programs. As discussed in the Wilber declaration, a fully phased-in stormwater program may add $50 annually. An asset management may add $100 annually. When the costs of these programs are considered concurrently with collection and treatment system improvements, rates never exceed 1.2% of median income. MSD ratepayers, in short, clearly have the ability to pay for the improvements needed for complying with the CWA.

7. Determining the ability to pay for a program designed to control pollution from a 100-year storm is made difficult because MSD and its consultants have created controversy and confusion as to the costs associated with this program. When viewed apart from other water quality programs, however, spending for the 100-year program raises depreciation-adjusted rates to 1.6% of median income, an amount that is still below the USEPA's financial distress threshold. Finally, the MSD has framed this discussion in terms of minimum and maximum programs; it is very likely that an intermediate and/or an accelerated program could be fashioned that would achieve water quality goals more quickly and still maintain rates below the USEPA threshold.

B. MSD Estimates

8. MSD's director, Patrick Karney, has made public statements about the rates needed to pay for pollution controls. In May 2002, Director Karney told a public meeting that residential rates (whose pre-overflow control he estimated at about $320 annually) would increase to $1000 a year, if a program that controlled 10-year storms was implemented. His estimate for

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[6] Although tempting, it is misleading to use rate surveys to make judgements about the affordability, reasonableness or fairness of user fees across systems. Systems have to recover their costs. System costs are affected by many variables, including population density, topography, age of system, extent of funding from sources other than fees (e.g., property tax), compliance, and level of treatment. Rate surveys and subsequent comparisons seldom take these differences into account.

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controlling a 100-year storm was $5,100 annually. Mr. Karney repeated this $5,100 estimate in August 2002 in an interview in *USA Today*. The Director presented his estimates without explaining how fast the program would be implemented, when in the future these rates might be charged, how many households underlie these estimates, whether the estimates are averages or medians or are the upper end of a very wide range. Accordingly, it is difficult to enter into any reasoned discourse about them. Indeed, one could conclude that one of his purposes was to startle the audience.

9.   I also reviewed the statements made in January 2003 by MSD consultants, Clyde Wilber and George Vredeveld.[7] Mr. Wilber estimated residential rates for pollution controls plus a stormwater program plus an asset management program. In so doing, he makes comparisons with Director Karney's estimates difficult.

10. Mr. Wilber's declaration is ambiguous about whether the water quality programs are phased-in, the rate of implementation, whether the rates jump in an instant to the new level or reach it in a long climb over time, and if and how borrowing is phased-in. During his deposition, however, Mr. Wilber admitted that his estimates represent a future peak rate, not a first-year rate. He does not know when the peak rates will be realized. He thinks that the borrowing will take place over time, but he does not know how much time.

11. Mr. Wilber found rates would increase to $937 for a program that controlled a 10-year storm and to $1797 for a program that controlled a 100-year storm. The estimates include a stormwater program plus an asset management program.[8] Mr. Wilber's estimates -- which he labels "dramatic" -- are far less than Director Karney's. This is so even though he is measuring the effect on ratepayers of three programs, not just a pollution control program. Also, and this is particularly noteworthy, Mr. Wilber's calculations shift the residential share of future system costs from 67%, where it is now, to over 90%. Ambiguities about when rates will increase and his overstatement about the share of costs born by households in the future confuses and obfuscates the public discourse on the costs and timing of CWA compliance.

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[7] Mr. Wilber makes rate estimates using cost estimates prepared by MSD's consultant, BBS Corporation, MSD budget documents, his own opinions about the cost of other water quality programs, and consultations with Professor Vredeveld (and others) at the Economics Center for Education and Research at the University of Cincinnati. Mr. Wilber uses a budget document that includes depreciation. In so doing, he departs from USEPA guidance for preparing an assessment of ability to pay. Mr. Wilber includes both depreciation and asset management funding in his rate estimates and in so doing counts the same concept twice. Dr. Vredeveld uses, *inter alia*, Mr. Wilber's rate estimates to make statements about economic impact and financial capability, thereby carrying over Mr. Wilber's errors into his report.

[8] Mr. Wilber made a dubious assumption about how to divide responsibility for future revenues between the residential and the industrial/commercial sectors. Citing a study that found **surcharges** to be revenue neutral he applied the results to **user** charges and concluded that any increase in commercial/industrial rates will be offset by (conservation) efforts that leave revenue from industry unchanged. This is fantastic. If this were true MSD could announce a rate increase and industry would reduce water use. This would effectively expand capacity. Unfortunately Mr. Wilber has made an error, because there are no expansions of capacity to be obtained simply by posting a rate increase. The reason for his error is that the behavior of industry to surcharges cannot be transferred to a base rate increases. The behavior is different because there are more substitution possibilities that allow industry to avoid a surcharge than there are to avoid a base rate increase. A consequence of Mr. Wilber's error is to shift too much responsibility for paying for overflow controls to residences, thereby exaggerating the change in residential rates.

C. Approach, Assumptions and Data

12. Why do rate estimates produced by various and concerned interest groups differ? Are MSD ratepayers being asked to carry more of a financial burden to protect human health and the environment than are the ratepayers in other parts of the country? These are important questions that require a serious look at the rates needed to pay for compliance and the community's ability of to pay.

13. My approach to assessing ability to pay follows that of the USEPA. First, I obtain estimates of the spending needed to control pollution. Next, I estimate the residential sector's share of total costs. Then, I distribute the costs to each household so that each household receives an equal share. Finally, I express the household's cost share relative to median household income and compare the result to USEPA's threshold of financial distress.[9]

14. Any critical investigation of ability to pay requires economic, demographic, and financial assumptions. My assumptions are as follows:

a) The users of the system will pay all the costs of the system in proportion to their flow, with households responsible for 67% of flow (current condition projected to continue into the future).

b) There are at least 300,000 MSD residential customers[10] and their number is constant through the period 2002-2024 even though the county added 7900 households between 1990 and 2000.

c) Estimates of the capital costs of the treatment plant upgrades and collection system improvements are found in the BBS Corporation Report, June 2001. The report describes two programs. The first is for a 10-year storm (Minimum Program). The second is for a 100-year storm (Maximum Program). My use of BBS data overstates program costs because some controls may already be built, some are being built, and there are questions about including certain retention basin costs *and* tunnel costs in the maximum program. The questions about

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[9] USEPA considers a community on the threshold of financial distress if residential wastewater costs minus depreciation exceed 2% of median household income. Median household income is the dollar amount that divides ratepayers in half; as many households make more as make less than this amount. Some argue that median income does not represent the burden that the poorest households bear. This is true. Environmental infrastructure programs are not antipoverty programs. Communities simply do not build infrastructure (transportation, educational, public health, medical, recreational and the like) based on what the poor can afford. Poverty is a condition best addressed with poverty programs not with infrastructure programs. Others argue that households have more expenses than just wastewater. This also is true. It is possible to include expenses for example for food or utilities. It would be wrong, however, to use the same 2% threshold when expenses other than wastewater charges are included. I accept the USEPA2 % threshold and use it not only as a measure of the threshold burden in Hamilton county, but also as an indicator of the maximum amount other communities are being asked to pay for wastewater controls.

[10] The 2000 U.S. Census reports 346,000 households in Hamilton County. MSD serves most but not the entire county. Subtracting out the households in Terrace Park (759), Glendale (904), and Harrison City (2682) leaves 342,000. There is an unincorporated area of western Hamilton County not served by MSD. I approximated it by Whitewater Township, which has 2038 households. This leaves 340,000 households. To be conservative I reduce this estimate by 10% and round down to 300,000.

basin *and* tunnel versus basin *or* tunnel are unlikely to be resolved soon. Consequently, I estimate the maximum program three ways: as stated by BBS; without a $555 million tunnel, but with a retention basin at SSO 700; and, with a tunnel, but without a $240 million retention basin at SSO 700.

d) Pollution controls will be built over 20 years commencing in 2003 and ending 2023. Financing will commence in 2003 and the last borrowing will be in 2018.[11] Costs are escalated at 2.75% annually. The rate is a ten-year average of the Construction Cost Index reported by McGraw-Hill.[12]

e) The borrowing cost is 5.5%. This rate reflects a long-term measure of the central tendency of market interest rates. The data to construct this average is available in *The Economic Report of the President*. (Although subsidized rates exist that are much lower, MSD has indicated an unwillingness to apply for them. Recent borrowing by MSD has been at rates below the long-term mean municipal rate of 5.5%.)

f) The operating costs of the controls are proportional to their capital cost.

g) Operating costs of the existing system less depreciation increase from a base of $74.4 million at an annual rate of 3.5%. The rate is a ten-year average of annual changes in the water and sewer maintenance index reported by the Bureau of Labor Statistics. The base amount is given in 2001 MSD Financial Reports.

h) Existing debt will be repaid according to the schedule in the November 2, 2001 Official Statement.

i) Median Household income grows at 3.5% per year from its base level of $40,000 in 1999[13].

j) A Stormwater program costs $50 per household per year[14].

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[11] I also consider an accelerated minimum program that borrows the funds in 10 years and builds out in 15 years.

[12] The Bureau of Labor Statistics' now discontinued price series on water and sewer construction records an annual price change of 2.4% for 1986 to 2001.

[13] MSD serves most but not the entire county. The U.S. Census reports median household income for Hamilton County in 1999 at $40,964. It also reports the number of households in $5000 ranges (e.g., the number between 35,000 and 39,999). Subtracting out Terrace Park, Glendale, Harrison City and Whitewater Township and examining the remaining households by $5000 income ranges reveals that 49% make less than 39,999 and 54% earn less than 44,999. Mindful of this data, I place median household income at $40,000. The growth rate is based on Nestor Terleckyj and J.F. Sencindiver's projection of regional economic growth for this region of about 1.5% annually after inflation.

[14] No one knows how much stormwater controls will cost. The estimate by Mr. Wilber of $50 per year per household is based on the experience of Fairfax VA, one of the few counties to implement a stormwater program. Hamilton County's experience may be different from Fairfax. Topography, rainfall, amounts of impervious surface are important variables to consider in a stormwater program and significant differences may exist between Fairfax and Hamilton County. Some communities are considering a separate stand-alone utility to manage stormwater. Whether there is any efficiency to this remain to be seen. At $50 per household, Hamilton County will collect in excess of $25 million annually. There are about 346,000 households in Hamilton county plus commerce and industry will also pay for stormwater controls (346,000 * 50)/. 67 = 25.8 million.

k)   An Asset Management program costs $100 per household per year[15].

D. Results

15. Upgrading treatment plants and improving the collection system adds to MSD's debt service and O&M costs. These additional costs are paid for by rate increases. Obviously, the minimum program costs less and requires a smaller rate increase than the maximum program. See the "Fees" chart. Phasing in a program allows the increase in debt service for overflow controls to be offset somewhat as debt for the existing system is retired. This blunts the impact of any program on financial capability. This is illustrated for the 10-year program in the "Cost Share" chart.

16. The user fees needed to pay for selected programs together with estimates made by MSD and its consultants are shown in Table 1. The fees are stated in terms of the year in which they occur and are stated relative to income. Table 2 shows the fees/income financial capability indicator. The spreadsheet calculations supporting these results are in the Appendix.

17. Minimum program. Rates for the minimum program rise to $692 in 2022. When other programs such as stormwater and asset management are included rates reach $991 in 2022. Annual charges for the minimum program rise to .8% of median household income when considered alone and rise to 1.2% of median income with stormwater and asset management programs included. Both measures are well below the financial distress threshold of 2%. See the "Threshold" chart.

18. Maximum program as defined by BBS. For the maximum program, rates rise to $1327 in 2022. When other programs such as stormwater and asset management are included rates reach $1626 in 2022. Annual charges for the maximum program rise to 1.6% of median household income when considered alone and rise to 2.0% of median income with stormwater and asset management programs included.

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[15] No one knows how much asset management will cost. The Government Accounting Standards Board (GASB) issued directive #34 requiring governments to report the value of their infrastructure in their financial reports; to report what updates and expansions are needed to provide a level of service the public wants. Any difference between needs and capability would signal a level of spending. GASB 34 does not require replacement of the system every 60-75 years. Nor does it determine the level of readiness for infrastructure. MSD, for example, could make a strategic decision to maintain infrastructure so to eliminate all overflows from 10-year storms. It would then have to **report** the capacity needed to achieve that goal and assess and **report** the capacity it now has. A charge of $100 per MSD household plus an equivalent amount for industry and commerce translates into about $44.8 million a year for an MSD Asset management program (300,000 *100)/.67 = 44.8 million).

Table 1: Peak User Fees by Program

	Minimum only	Minimum Plus	Maximum only	Maximum Plus	Comments
Karney	1000		5100		unknown when rates peak and if they are only for pollution controls
Wilber	N/A.	937[16]	N/A.	1797	Unknown when rates peak
Kavanaugh	692 [17, 18]	991	1327	1626	Rates peak in 2022
w/o basin	N/A.	N/A.	1290	1588	Rates peak in 2022
w/o tunnel	N/A.	N/A.	1192	1491	Rates peak in 2022

Source: MSD, Wilber declaration and the Appendix to this analysis

Table 2: Financial Capability

Distress Threshold = 2.0

	Pollution control alone[19]	Year achieved	Pollution control plus	Year achieved
10-Year	.8[20]	2013	1.2	2018
100-Year	1.6	2018	2.0	2018
w/o basin	1.6	2018	1.9	2018
w/o tunnel	1.5	2018	1.8	2018

Source: Appendix to this analysis

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[16] Mr. Wilber's "plus" rates include charges for both depreciation and asset management. This is double counting.

[17] None of the estimates I made include a charge for depreciation. The "plus" rates include a charge for asset management, a substitute concept for depreciation.

[18] The minimum accelerated 10-year program has peak rate in 2022 of $672; the minimum plus has a peak rate in 2022 of $970.

[19] None of the estimates I made include a charge for depreciation, the pollution control "plus" rates include a charge for asset management, a substitute concept for depreciation.

[20] The financial capability indicator for the minimum, accelerated, pollution control alone, program reaches .9 in 2013; the accelerated minimum plus reaches 1.2 also in 2013.

19. Maximum program without the tunnel. For the maximum program without the tunnel rates rise to $1192 in 2022. When other programs such as stormwater and asset management are included rates reach $1491 in 2022. Annual charges for the maximum program rise to 1.5% of median household income when considered alone and rise to 1.8% of median income with stormwater and asset management programs included.

20. Maximum program without the basin. For the maximum program without the basin, rates rise to $1290 in 2022. When other programs such as stormwater and asset management are included, rates reach $1588 in 2022. Annual charges for the maximum program rise to 1.6% of median household income when considered alone and rise to 1.9% of median income with stormwater and asset management programs included.

21. Finally, MSD's director has voiced concerns that a pollution control program will have an adverse impact on the region's economy[21]. I find no detectable competitive impact to the county's economy. The US Department of Commerce, Bureau of Economic Analysis describes Hamilton County as a $28 billion dollar economy. That is, when the sum of wages and salaries, interest and rents and profits earned in the county are summed the result is $28 billion a year. The annual incremental cost of pollution controls as a share of the county's economy will vary over time as the program is phased in and the regional economy grows. Using the most expensive program – Maximum program as stated by BBS, the annual cost of the program ranges from .6% of the county economy in year 1 to about 1.2% of the county economy in year 18. Some of this spending will be spent within the county and contribute to its growth. Even if, to set a polar case, all spending for pollution control goes to workers and companies that are located outside the county, the maximum competitive impact on the county's economy will be less than 1.2% of income. This is because other communities that compete with Hamilton County are also building pollution controls. Thus, the *status quo* difference between MSD and regional competitors is no more than 1.2%. A change of this small size is lost in the flux of other price changes for the components of income: labor, capital, energy, and materials.

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Michael Kavanaugh, Ph.D

Date: _____

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[21] Director Karney was quoted in the August 21, 2002, issue of USA Today that eliminating SSOs would "bankrupt us...It would be, last one out, turn out the lights. Cincinnati would be just another wide spot on I-75." In my opinion, this statement has no basis in fact or economic analysis.

Sources Considered

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Appendix

Microsoft Excel
Worksheet